

**Grain Marketing in Senegal's
Peanut Basin:
1984/85 Situation and Issues**

by

Mark D. Newman

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SPECIAL NOTE FOR ISRA-MSU REPRINTS

In 1982 the faculty and staff of the Department of Agricultural Economics at Michigan State University (MSU) began the first phase of a planned 10 to 15 year project to collaborate with the Senegal Agricultural Research Institute (ISRA, Institut Sénégalais de Recherches Agricoles) in the reorganization and reorientation of its research programs. The Senegal Agricultural Research and Planning Project (Contract 685-0223-C-00-1064-00), has been financed by the U.S. Agency for International Development, Dakar, Senegal.

As part of this project MSU managed the Master's degree programs for 21 ISRA scientists at 10 U.S. universities in 10 different fields, including agricultural economics, agricultural engineering, soil science, animal science, rural sociology, biometrics and computer science. Ten MSU researchers, on long-term assignment with ISRA's Department of Production Systems Research (PSR, Département de Recherches sur les Systèmes de Production et le Transfert de Technologies en Milieu Rural) or with the Macro-Economic Analysis Bureau (BAME, Bureau d'Analyses Macro-Economiques) have undertaken research in collaboration with ISRA scientists on the distribution of agricultural inputs, cereals marketing, food security, farm-level production strategies and agricultural research and extension. MSU faculty have also advised junior ISRA scientists on research in the areas of animal traction, livestock systems and farmer groups.

Additional MSU faculty members from the Department of Agricultural Economics, Sociology, Animal Science and the College of Veterinary Medicine have served as short-term consultants and professional advisors to several ISRA research programs.

The project has organized several short-term, in-country training programs in farming systems research, agronomic research at the farm-level and field-level livestock research. Special training and assistance has also been provided to expand the use of micro-computers in agricultural research, to improve English language skills, and to establish a documentation and publications program for PSR Department and BAME researchers.

Research publications from this collaborative project have been available only in French. Consequently, their distribution has been limited principally to West Africa.

In order to make relevant information available to a broader international audience, MSU and ISRA agreed in 1986 to publish selected reports as joint ISRA-MSU International Development Paper Reprints. These reports provide data and insights on critical issues in agricultural development which are common throughout Africa and the Third World. Most of the reprints in this series have been professionally edited for clarity; maps, figures and tables have been redrawn according to a standard format. All reprints are available in both French and English. A list of available reprints is provided at the end of this report. Readers interested in topics covered in the reports are encouraged to submit comments directly to the respective authors, or to Dr. R. James Bingen, Associate Director, Senegal Agricultural Research and Planning Project, Department of Agricultural Economics, Michigan State University, East Lansing, MI 48824-1039.

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PREFACE

Decree 84-1512, specifying the official regulations for the 1984/85 marketing season, was signed on December 21, 1985. Although the discussion presented in this paper could not take into account the regulations that were finally released, the issues discussed here remain essential for Senegalese agriculture and grain marketing.

The decree assigns exclusive responsibility for producer level purchases of millet, sorghum, corn and cowpeas to licensed wholesalers, the Food Security Commissariat (CSA) and the Regional Development Agencies. Transfers of grain in quantities larger than 200 kg are legal only for the above agents or retailers. The decree does not specify whether a receipt is necessary in order to legally transport grain.

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1. INTRODUCTION

Senegal's New Agricultural Policy, announced at an Interministerial Council Meeting on March 26, 1984, and further developed in Interministerial Council Meetings on Credit and Cooperatives in April and May 1984, focuses among other items on the essential nature of:

1. Assured market outlets for agricultural products, especially grain,
2. Assured sources of food grains for consumers, and
3. A more limited role for government in the food grain marketing process, with greater emphasis on providing direction for activities of others (farmers, cooperative organizations and private traders) rather than actually performing all necessary functions.

This paper is based on the preliminary findings of surveys and interviews conducted by ISRA's Macro Economic Analysis Bureau Grain Marketing Program. It briefly describes the current grain marketing situation, with emphasis on the peanut basin. It also discusses a number of immediate policy questions relative to the roles of the private trade and the public sector in pursuing the goals of the New Agricultural Policy.

2. 1984 AGRICULTURAL PRODUCTION

Government estimates put the millet crop at 471,447 tons nationally compared to 351,812 tons in 1983/1984. The maize harvest at 98,450 tons is the largest since 1978. After a 1983/1984 harvest estimated to cover only 32% of cereals needs, the 1984/1985 grain crop represents a major improvement.

Early rains and late peanut seed and fertilizer distribution, combined with low seed carryover from the 1983/1984 season contributed to an increase in area planted to millet compared with the area planted to peanuts in the peanut basin. Relative prices were probably another factor contributing to the millet planting increase. The free market price for millet varied between 65 and 125 FCFA/kg during the 1983/1984 season, never falling to the official producer price of 55 FCFA/kg. The maize price also remained

above the official price of 50 FCFA throughout the season. There were no "official" millet purchases by the Food Security Commissariat (CSA). The official peanut price to producers during the marketing season was 70 FCFA/kg, including 20 FCFA/kg retained to finance seeds and fertilizer. This means that the producer who marketed through official channels actually received 50 FCFA/kg in cash.

Official 1984/1985 producer prices for millet and peanuts were announced on October 8, 1984, at the same time as announcement of opening of the official marketing seasons for millet on October 15 and peanuts on October 29. These prices probably had no impact on 1984/1985 production, but include a major impact on the amount and share of production marketed through official channels.

3. MARKETING OF THE 1984 GRAIN CROP

Farmers in the peanut basin began marketing their millet and peanuts through private channels in mid-September 1984. According to ISRA-BAME surveys, producer prices for millet varied from 50-75 FCFA/kg with some reports of sales at 30-45 FCFA/kg (Le Soleil, October 4, 1984). In Dakar the consumer price of millet fell from about 130 to 110 FCFA/kg between harvest and late October.

There are few reliable data available on the share of millet production marketed by farmers. Results of one study conducted in the peanut basin during 1981/1982 indicate that about 5-10% of the millet crop was marketed (Newman, forthcoming). Given the marked decreases in peanut production over the last several years, the proportion of the millet crop marketed may increase this year because (1) production will come closer to satisfying the consumption needs and (2) producers will have less cash income from peanuts. For some, millet will become a cash crop. Surveys currently being undertaken by ISRA's BAME unit will provide some estimates of such marketings.

The Private Grain Trade

Grain trading in the peanut basin involves a system of collectors and wholesalers of grain trade who assemble small (3-5 kg) and larger (50-100 kg) quantities at the village and periodic market level. Bagged grain (80-130 kg) is generally assembled in periodic markets and handled in break bulk to move it to major regional centers. At these centers it is consumed, stored or redistributed to cereal deficit areas. Some storage also takes place in, or near, the approximately 200 periodic markets in the peanut basin, where

grain is exchanged in varying volumes (Ndoye, Newman, Fall, Ndiaye, Sow). The private trade involves a variety of participants (some falling in multiple categories), including:

1. Men and women producers, who produce grain, both for their own consumption, to sell or exchange, or to give away to satisfy social or religious obligations.
2. Small volume collectors, day traders who have an extremely limited capital base, often reselling a sack of grain before beginning to assemble another. They generally resell the quantities collected before the end of the day on which they are collected.
3. Commission agent collectors, who assemble grain with money advanced the day on which they are collected.
4. Food deficit producers and non-producers, who assemble grain in order to store for their own consumption later in the year.
5. Speculators, who assemble grain at the village or market level in the hope that price variation will more than cover storage and handling costs.
6. Wholesalers, who perform a variety of functions, including physical assembly of break-bulk bagged grain in periodic markets, transportation between areas of surplus and urban centers and grain deficit rural areas, storage of cereals from harvest through the "hungry season" and covering the costs for handlers, commission agent collectors and for carrying interseasonal inventories. Wholesalers are also involved in a variety of coordinating functions, including the determination of "free market" prices, the exchange of information on supply, demand and price, etc.

The participants and the functions that they perform are discussed in further detail in Ndoye, (1984); and Newman, Crawford, Faye (October, 1984).

The legality of assembly, transportation and storage of grain, especially millet, by private traders has varied considerably from year to year since the dissolution of ONCAD in 1980. During the 1983/1984 marketing season, cereal trade was liberalized, but criteria for licensing of traders (agreement) were somewhat ambiguous. In the past, announcement of the list of traders officially licensed to participate in grain marketing often has taken place several months after the official opening of the marketing season. Thus, merchants were forced to either conduct their business illegally or to fail to provide an outlet for producers' grain (and forego opportunities for profit) for much of the marketing season. During 1983/1984, the marketing season was opened November 2, 1983 by Decree 84-53 of January 23, 1984. No list of traders specifically licensed to trade in millet was issued. (The regulatory environment, its evolution and impacts are discussed in further detail in Sow and Newman, 1984).

During the recent (1984/1985) marketing season, regulatory ambiguity continued to influence the marketing system. The interministerial council communique (Le Soleil, October 9, 1984) announced the beginning of the 1984/1985 campaign, but did not specify a role or change of role for private traders in grain marketing. The decree specifying the details of the marketing season was not signed by late November. Traders purchased new crop grain after mid-September, but the opening of the official marketing campaign on October 15, and the intervention of the Food Security Commissariat (CSA) in selected markets introduced considerable uncertainty into the system. Reports from several markets across the peanut basin indicated that merchants were told that they could not pay more than the official price of 60 FCFA/kg for millet. In some cases where a higher price was paid, there were reports that the government confiscated the grain and the merchants were reimbursed at the rate 60 FCFA/kg.

In some cases assemblers of grain reported receiving cash advances from the Commissariat to permit them to assemble grain for resale to the Commissariat at 60 FCFA/kg. This implies of necessity that the collectors paid less than 60 FCFA/kg to the producer in order to make a profit. Thus, the price received by producers was 50-55 FCFA/kg.

Thus, government interventions sometimes contribute to lower prices to producers, and lower producer incomes. They work against the stated objective of food self-reliance spelled out in numerous documents, including the VIe Plan and the New Agricultural Policy. Where producer millet prices were actually below 60 FCFA/kg, the impact of the government's policy has been to contribute to higher prices, though these prices are not always as high as the official prices.

Current research by ISRA's-BAME will permit a more precise evaluation of the degree to which government interventions are contributing to incentives and disincentives to policy objectives. This evaluation will be made more difficult if fear of control forces transactions out of the periodic markets into villages and other places that permit privacy in exchange. Likewise assembly costs per kilogram collected will be higher if grain must be assembled by private traders through secret transactions at more dispersed village locations rather than in periodic markets. This will mean that producers will be offered lower prices by the private trade, and/or consumers will pay more in order to cover the increased costs.

The Public Sector in the Grain Market

With the opening of the 1984/1985 marketing season for grain on October 15, the Food Security Commissariat (CSA) began a campaign aimed at collecting 40,000 tons of grain: 32,000 tons of millet, 7,500 tons of maize and 500 tons of cowpea.

Assembly was to be conducted through: direct collection by the CSA (30%); collection through cooperatives and village sections (50%) and collection by the Rural Development Agencies SODEVA, SODAGRI and SOMIVAC. Each of these participants had separate quotas and slightly different price structures. Farmers selling millet, maize or cowpea directly to the CSA had to sell minimum quantities of 50 kg. They received the official price of 60 FCFA/kg. Farmers selling to cooperatives or village sections received the official price of 60 FCFA/kg, plus an additional 3 FCFA/kg for transportation. The village section received a rebate, plus collection fees of 4 FCFA/kg.

Grain collected by the rural development agencies was purchased by CSA upon delivery to a CSA warehouse at 68 FCFA/kg, including transport and assembly costs. The amount paid to the farmer was not specified.

Some grain was collected by the CSA, but the village sections appear to be in the process of "sensibilization." Progress of RDA assembly program is not known.

According to sources in periodic markets, information meetings were held by CSA representatives at the village level in which the pricing structure was explained. Farmers were urged to sell at 60 FCFA/kg in order to permit the CSA to return during the "hungry season" (soudure) to sell grain at 70 FCFA/kg.

Where the market price was already higher than 60 FCFA/kg for millet, there were a number of reported cases of producer refusal to sell at 60 FCFA/kg. Some transactions between merchants and farmers at prices higher than 60 FCFA/kg were simply conducted outside of the physical market place.

The CSA apparently gave up on its target of assembling 500 tons of cowpea for which the free market price in most places was actually 200%, or more, greater than the official price.

In markets where the price paid to producers was less than 60 FCFA/kg for millet prior to the arrival of the CSA, some traders raised their prices to 62 FCFA or 65 FCFA.

In several such cases, administrative authorities in periodic market places stopped traders from purchasing at higher prices than the official price and/or required them to resell to the CSA at 60 FCFA/kg. One CSA official reported that such regulatory practices were neither officially condoned nor the general rule. However, according to certain administrative officials, it was announced at one regional CRD that private trade in cereals or peanuts is illegal.

According to sources in the Ministry of Commerce, trade in cereals is still officially free. One organization seeking a permit to purchase a large quantity of grain to ship between regions was informed that no permit is necessary.

In the absence of any decree specifying who may or may not legally participate in grain assembly during 1984/1985, there was apparently no legal basis for stopping merchants from paying more than the official price to producers, or barring them from participating in the trade. In fact, there was apparently no decree authorizing the CSA to purchase at the producer level.

During the 1983/1984 marketing campaign, the CSA made no attempt to purchase millet because the market price was higher than the official price. However, the decree 84-53 of January 23, 1984 (specifying the organization of the 1983/1984 campaign) stated that:

1. Purchases at the producer level and wholesale sales are the responsibility of licensed wholesalers;
2. The Ministry of Rural Development has the authority to authorize the CSA to purchase from wholesalers as necessary; and
3. Transportation of millet across regional boundaries is legal in quantities smaller than 200 kg, and legal for licensed traders carrying a receipt for quantities larger than 200 kg.¹

¹The issue of a receipt (facture) for millet being transported posed some problems during the 1983/1984 marketing season. When traders purchase from farmers, it is generally difficult to get a receipt. Some Ministry of Commerce personnel suggested that the necessary receipt could be obtained by having the farmer and trader go to the Economic Control Office in the nearest major center. This presented obvious difficulties given that market places where assembly generally takes place are often far from the Economic Control Offices. Additionally, the relationship between merchants and economic control officials is such that many would be extremely hesitant to present themselves with a client in order to get a receipt. According to Ministry of Commerce sources, this problem was alleviated in the decree for 1984/1985 by simply requiring that merchants purchase only from the CSA. In that way, the CSA can provide the merchants with a receipt. Of course, this raised numerous other questions:

1. If the CSA only purchases in quantities of 50 kg or more, who will assemble smaller quantities?
2. At what price will the CSA sell grain to merchants?
3. If the CSA sells the grain it collects to merchants, what will it have available to resell to consumers later in the year?
4. Given the CSA target of 32,000 tons of millet, who will purchase the rest of the millet in the pipeline?

These and other questions remain to be analyzed, preferably before such a policy is implemented.

Given that this decree has not yet been abrogated or superseded, interrelationships between private traders and the official marketing program remain unclear. Part of the problem facing those who might clarify the roles of public and private sectors in Senegal's grain markets is a need for a more precise examination of public sector objectives in participating in the grain market. It is important to understand the objectives in order to evaluate the effectiveness of different combinations of direct public sector participation in marketing and the use of regulatory incentives and sanctions to influence private sector activities.

Government Grain Marketing Policy: Objectives and Issues

In discussing the national goal of food self-reliance (autosuffisance alimentaire), the New Agricultural Policy (NPA) set a target of 75% self-sufficiency by the year 2000. Essential to the achievement of this goal, according to the NPA, are: assured markets for producers; assured supplies for consumers; and a more restricted role for government. Where confusion has been interjected into the marketing system as a result of government actions, it often stems from failure to consider the interdependent, and sometimes mutually exclusive, nature of some elements of these objectives. The following discussion briefly highlights some of the key issues associated with each objectives.

Assuring Markets to Producers

Grain production in Senegal has been traditionally oriented toward satisfaction of home consumption needs of a rural population. The introduction of peanuts, and to some extent cotton, as cash crops helped to bring producers into a market economy. Willingness of producers to increase grain crop production as a source of cash revenue is critical to generating the marketed surpluses necessary to approach government's self-reliance goal. At the same time, a primary difference between grain crops and peanuts or cotton is that a government- or parastatal-controlled market outlet has generally existed for cash crops. The "conventional wisdom" in the case of grain marketing is that in the absence of "assured" outlets for grain, producers are at the mercy of an "exploitive" private sector that will generally fail to provide the incentives necessary to increase grain production. Thus, there is a strong philosophical bias among many Senegalese toward a major government or parastatal role in grain marketing. To date, the empirical basis for evaluating the validity of the "conventional wisdom" or its

policy implications has not existed. This is one of the objectives of the BAME grain marketing program.

The notion of an assured market for grain can be approached as an institutional question, eg. who will assure that producers have a market outlet? It must also be seen in terms of elements of the assured market objective, eg. a market outlet may exist, but prices and revenue implications are critical to the degree to which the outlet will be judged satisfactory.

On the basis of policy documents and discussions with a variety of government officials, it appears that the objective in setting a price for millet, maize and other cereals is to establish a minimum level of prices that producers will receive; i.e. a floor price, as opposed to a single fixed price at which all trade must take place.

A floor price is generally a guaranteed minimum price to producers that they are not obligated to accept if supply and demand factors result in offers of higher prices. The existence of an effective floor price decreases some of the risk to producers but does not foreclose the opportunity to sell for higher prices. Because prices above the floor price increase incentives to produce more grain, it is in the interest of the government to have a floor price, rather than a fixed price. Fixed prices appeal to government or parastatal agencies seeking to purchase grain because they offer administrative simplicity. Nonetheless, when the fixed price level is out of line with supply and demand factors in the market, and especially when the fixed price is below open market prices, the net impact is a disincentive to increase production. The floor price concept was applied during the 1983/1984 grain marketing season, when the CSA decided not to intervene in the markets because prices were above the official prices.

During the current marketing season, the official price of millet was applied as a floor price under some circumstances and sometimes as a fixed price. As a result, considerable uncertainty existed among producers and merchants regarding what price they were permitted to sell or purchase. Obviously, prices received, as well as relative prices received for different crops influences producer production decision as well as decisions on leaving agriculture for urban employment. These are also areas requiring further study.

If, in fact, the objective of assuring markets to producers implies a government commitment to maintain floor prices for grain, several options for implementing the policy exist, including:

1. Having a governmental or parastatal entity be prepared to purchase grain at the floor price directly from all producers, regardless of quantity or location;
or

2. Having a governmental or parastatal entity be ready to purchase either from producers, their cooperative organizations, or merchants at selected points in certain minimum quantities at a floor price, or a floor price plus some margin for assembly costs; or
3. Having a government regulate the private trade and the prices paid to producers through the use of incentives and/or police powers.

These and other options will be developed in further detail in forthcoming BAME analyses. Uncertainty regarding the "rules of the game" for marketing grain is definitely a disincentive to attaining national objectives of assured markets and increased production. The issue of price for producers includes dimensions of relative and absolute prices across commodities, across time and space and after the performance of different marketing functions, such as assembly, transportation, storage and processing. Additionally, decisions regarding prices and market outlets for producers will have implications for the second objective mentioned above, assured supplies for consumers.

Assuring Supplies to Consumers

The objective of assuring supplies to consumers has multiple dimensions. These include the choice among a range of locally produced and imported cereals; the choice of prices that are satisfactory in terms of their implications for nutrition, income and welfare distribution, foreign exchange costs, and political stability; choices concerning food security reserves, storage and transportation strategies, costs of storage and who will support them; and choices concerning the form of products for which supplies will be assured. These will be looked at in detail in the following.

Imported and Local Grain

Consumer tastes for imported broken rice have developed since early in the century. In 1935-1939, rice imports averaged 75,000 tons annually (Founou-Tchigoua, p. 93). Currently, Senegal imports 340,000 tons of rice and 110,000 tons of wheat annually. Also, in 1984, 90,000 tons of red sorghum imports are expected.

While perhaps initially an urban phenomenon, imported grain is now available in rural markets throughout the country.

Shifting to increased consumption of locally produced grain is a major component of the government's food self-reliance objective. Yet, few studies are available on

consumer preferences and choice processes affecting demand for imported and locally produced grain.

Past efforts to increase consumption of millet, such as promotion of a blended millet and wheat bread (pamible) or pre-packaged couscous failed for a number of reasons. Among these were scarcity of millet supplies and the absence of effective demand.

Recent shifts in the world market price for rice and the exchange rate between U.S. dollars and the franc CFA have raised the price of rice enough to necessitate subsidies in order to sell imported rice at current official prices. This makes increased local production of cereals a more attractive policy option. In the short run, a policy choice on raising consumer prices of imported rice to reflect costs in the world market must be weighed against nutritional, welfare and political consequences. Any rise in the price of imported grain will make locally produced cereals a more attractive alternative, leading to higher demand and higher prices if the market is permitted to function. In the short run, however, supplies of local grain on the market can only increase slightly. The overall marketing target for the CSA millet for 1984/1985 is 32,000 tons, slightly more than one month's imported rice consumption.

In the longer term, producers may respond to higher prices by increasing production of cereals both absolutely and relative to other crops. However, nutritional and political consequences must be dealt with in the short run. Once again, considerable uncertainty about these consequences stems from the absence of research. Data on distribution of wealth and income, as well as data on the nature of food demand by different income groups, in Senegal are scarce. The consumer price index is calculated based on household consumption patterns from 1961. There are assorted studies of consumption patterns in small sections of Senegal--for urban areas, a few villages in a single region, etc. Given the major shifts that have occurred in Senegalese lifestyles and the Senegalese economy in the last 20 years, new studies are necessary for realistic analyses of the potential impacts of certain food and agricultural policy options on Senegalese consumers.

The administrative of importation, pricing and distribution of imported grains by the government provides control, but at potentially high cost. Another factor affecting adequacy of supplies involves assembly, pricing and distribution of locally produced cereals. Although data providing a rigorous basis for precisely estimating linkages between prices of domestic and imported cereals (elasticities) are lacking, there is obvious substitutability. Thus, prices for local and imported cereals must be considered together.

Prices

An objective of assured sources of food grain supplies for consumers implies that grain is not only physically available, but also within the reach of consumers in price and income terms. As on the producer side of pricing, government has a number of policy options to influence or administer prices or leave price alone.

Government can fix prices to consumers, as it does with imported cereals. If government also fixes producer prices of locally produced grain, the permitted margins will have an impact on who will be willing to provide grain to consumers, as well as where and when will also increase the difficulty of price enforcement. Thus, with fixed prices, government or a parastatal organization may play a variety of different roles, ranging from complete control of assembly and physical distribution, to that of a regulator using a combination of incentives and policy power.

An intermediate option is to allow prices to fluctuate within a certain range, but establish a ceiling price at which point government will intervene. Intervention may include commercial imports, distribution of foreign assistance, release of security reserves and/or price enforcement by Economic Control officials and the policy.

Coupled with a floor price to producers, the objective of setting a ceiling price for cereals is to establish a range within which prices will be stabilized. The difficulty and cost of implementing such a system depends upon the absolute level at which prices are set and the range. At one extreme, the floor and ceiling prices would be so close together that constant intervention would be necessary. The other extreme the range would be so great that neither of the objectives for producers nor consumers are met. An intermediate course is obviously preferable. This would imply that government is able to set a producer price which is profitable for producers, and which private traders and cooperative groups (village sections, etc.), are willing to pay throughout most of each season and in most years. This might require a system of incentives. On the consumer side, prices would be set at a level which will not have major negative, nutritional, welfare or political consequences in most years. Under such a system, certain disadvantaged people may require assistance. But, for a large share of the population, cereal needs can usually be satisfied without direct intervention.

An example of such a range is the CSA's attempt to convince farmers to sell millet at 60 FCFA/kg in order to permit the CSA to resell at 70 FCFA/kg during the "hungry season" (soudure). If the CSA is able to carry out its plan, release of 32,000 tons of grain onto the market during the hungry season could have a major impact on price. Given that producer millet prices offered by the private sector are currently above 80 FCFA/kg

in parts of the peanut basin, the only way that prices can be stabilized at 70 FCFA/kg (after paying for storage for 6 months) is through high cost government interventions, major subsidies to the private sector, major infusions of foreign assistance, or forcing producers to sell at less than their opportunity cost. Producers might be better off selling at prices higher than 60 FCFA/kg and then having the market price rise above 70 FCFA/kg later in the year. However, there are no reliable data on whether producers who sell grain are the same as those who repurchase it. Once again "conventional wisdom" indicates sales and repurchases by the same producers due to cash flow considerations, but the empirical basis for accepting or rejecting such a conclusion is generally lacking.

Processing Strategy

Another important dimension is the form in which cereal products are supplied to consumers and the strategy for processing.

The choice between locally produced and imported cereals generally involves products requiring unequal amounts of supplementary labor in order to arrive at a ready-to-consume product. To understand consumer choices thus requires more than a quick analysis of relative prices of marketed grains. Imported rice and wheat bread are most closely comparable to millet flour, pre-prepared couscous or in some places cracked corn (maize). Yet, in most rural households processing is performed at home by labor that is assumed to have a low opportunity cost. So even direct comparisons of market prices for these products would not be accurate since millet can be shelled, winnowed and pounded by hand. Shellers and small mills are becoming more available, but still on a limited scale. The availability of mills and the economic tradeoff involved in the choices among hand pounding, small mills and semi-industrial processing are the topic of current study by ISRA's post-harvest technology research program (Mbengue). Research on industrial scale processing is being conducted at the Food Technology Institute (ITA) under a USAID sponsored millet transformation project.

Progress toward government's goal of increased consumption of locally produced cereals will depend in part on the availability of products that are satisfactory to consumer tastes and available on a regular basis, at prices within the reach of a mass market. This implies the need for a processing strategy.

Technical problems, such as stabilizing the degree of fermentation of millet couscous can be overcome. Better understanding of consumer choice processes, economic ramifications of shifting consumption patterns on household labor allocation,

producer incentives to provide the grain to be processed, and marketing system organization as it relates to assuring grain and processed product supplies where and when needed are all important to the evaluation of alternative options for assuring supplies of cereal based foodstuffs to consumers.

Food Security Reserves, Storage and Transportation

To discuss in great detail the concept of food security stocks is obviously beyond the scope of this paper. It is however useful to highlight several issues related to the objective of assuring supplies to consumers:

First, what is the purpose of a food security reserve? To respond to emergency needs? To stabilize prices inter-annually? To stabilize prices seasonally? etc. Each objective implies very different reserve sizes, costs and management requirements. If the decision is made to build up a reserve from local production during years when the country's cereals needs are only 50% covered, there is obvious potential for conflict with the goal of assured supplies to consumers. Depending upon the purchase price, there may be conflict with the objectives vis-a-vis producer incentives discussed under assurance of markets above. A food security reserve can offer important protection, but the implications for producers and consumers to build and maintain the appropriate type of reserves requires study.

Security reserves are generally set up to deal with years or seasons that represent a certain percentage deviation from trend. An event that has a 5-10% probability of occurrence requires a reserve of different size and organization is necessary in a situation with 95% probability of happening. While minor shortfalls can be covered by producer and merchant held stocks, extreme disasters will necessitate reliance upon international markets and assistance. The essential point to consider here is that decisions on procedures used to build a reserve to protect consumers from medium and long term shortages must consider short term consequences, both on the availability of grain to consumers and on the incentives for producers to respond to longer term needs with increased production. To attempt to purchase local grain to build up a reserve and then request foreign assistance to replace the local grain in rural markets with imported grain is probably not the most effective allocation of resources.

In addition to the issue of reserves, the broader question of storage merits consideration. Price policy can have a significant impact on farmer and merchant incentives to carry stocks. If government is successful in maintaining fixed prices for grain that do not vary seasonally, then those who carry stocks or inventories will not be

able to cover costs of storage. As a result, only government will be willing to assure that supplies are available when needed unless subsidies are provided to encourage others to do so. The same holds true for transportation between areas of surplus and deficit. If a single fixed price is to be maintained in surplus and deficit areas, there will be no incentives for producers or traders to move grain between those areas without some sort of subsidy. True, government can, given sufficient resources, take charge of the storage and transportation tasks. If it fails to do so, parallel means to perform both functions will probably develop, but the fixed prices specified by policy will not be respected. Thus, government or parastatals will be placed in the situation of having to tacitly accept illegal activities in order to satisfy its objective of assuring supplies to consumers.

One option for government policy makers is to permit an alternative (parallel or private marketing system) to evolve and develop as an unintended consequence of failures of government or parastatal agencies to control markets.

A preferable alternative is to develop a system of rules and incentives that will contribute to the evolution of a parallel or private sector marketing system in a manner consistent with stated government policies. The latter course will require some hard policy choices. However, to avoid making such choices does not mean that choices will not be made, but only that government decision makers will not contribute to making them.

4. CONCLUSIONS: DEFINING APPROPRIATE, PUBLIC, PARASTATAL, COOPERATIVES AND PRIVATE SECTOR ROLES IN SENEGAL GRAIN MARKETS

Grain markets are essential to progress toward the objectives of Senegal's New Agricultural Policy and VIth development plan. Current confusion in the regulatory environment concerning assembly and distribution of grain is contributing to considerable uncertainty among farmers, merchants and government agencies. This, in turn, contributes to performance that appears inconsistent with certain goals set forth in the New Agricultural Policy.

Some of the confusion in the system is simply the result of slow administrative processes. At the same time, it is also important to make choices among objectives that cannot be attained simultaneously.

Definition of coherent policies that will provide incentives to producers and assure supplies to consumers, without placing unnecessary burdens on government will require a strategy developed through:

1. A broad view of Senegal's food and agriculture system that carefully considers interdependencies among participants and tradeoffs among objectives;
2. Assuring that available research results and expertise of technical staff, including extension and research personnel are made available to those in the policy decision process; and
3. Emphasis on conducting additional research where necessary to provide answers to key policy-relevant questions.

One of the fundamental difficulties in defining appropriate roles for government, parastatals, cooperatives and private traders in grain marketing is that interests of individual participants are not necessarily consistent. The simplest solution for controlling grain flow from the perspective of government regulators may have adverse consequences for producers, consumers and others. If these are not evaluated at the highest levels of government, prior to implementation, the unintended consequences of policy may be more important than those consequences actually sought. Control of receipts, for example, may be facilitated if all grain transactions involve a government agency such as the CSA. But, to require the CSA to become involved in every transaction without the expertise or the resources to do so may simply create havoc in the system.

Likewise, assigning purchase quotas at fixed prices to a government agency without considering actual market conditions in different regions of the country may simply place government agents in a position of lowering prices and providing disincentives to farmers in order to fulfill their own administratively defined responsibilities.

The use of police power to force farmers to sell at prices below their opportunity cost can be expected to result in producer strategies to circumvent control. In the case of millet or peanuts, new parallel market channels will develop. If government decides to insist upon enforcement at the village level, despite the costs, corruption may increase, some sales will be stopped, but one net result will be that producers will have decreased incentives to produce the agricultural products needed to meet government policy objectives. Thus, effective regulation may turn out to be extremely ineffective in a broader policy sense.

For effective implementation, broad policy objectives, as spelled out in the NPA and elsewhere, must be translated into precise, achievable targets toward which progress can be evaluated. In turn, options for implementing policies directed toward these more specific goals can be analyzed. It is in this second stage that tradeoffs among objectives can be evaluated, priorities established and choices made.

Research programs, such as those of ISRA's BAME program, can contribute to informed policy choices. At the same time, bringing researchers into the policy dialogue can help to maintain a research orientation attuned to policy makers needs. Effective research programs can contribute to the process of short term decision making. At the same time, it is essential that a significant portion of their resources be devoted to developing the knowledge that will provide the basis for long-term decision making.

Senegal's grain marketing system is at a crossroads. Regular changes in the "rules of the game" for producers, private traders, cooperative organizations and government agencies since the dissolution of ONCAD in 1980 have introduced considerable uncertainty for all participants. Senegalese grain production since 1980 has not been outstanding, but for those cereals that have been marketed, a private system has grown up that is capable of moving grain among areas of surplus and deficit. The costs, margins and allocative efficiency of the system are currently under study. But no empirical basis yet exists for concluding that the private system is more or less efficient or more or less exploitative than public, parastatal or cooperative alternatives. Still, results currently available can be useful in the elaboration of a more consistent set of policies, designed to stimulate market participants to pursue actions consistent with the goals of the NPA. BAME researchers and research program results will be available to contribute to analysis of options and choices related to such policies.

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